4. PROJECT SUMMARY

A. Background - The Upper Mokelumne River Watershed Authority (UMRWA or Authority) is a Joint Powers Agency comprised of Amador, Calaveras and Alpine counties and six water districts which depend on the Upper Mokelumne River for water supply. Established in August 2000 the Authority is dedicated to stewardship of the Upper Mokelumne River watershed to enhance environmental values, water quality, recreation and water supply. One of the Authority's milestone tasks, the $1.27 million *Upper Mokelumne River Watershed Assessment and Planning Project* (project), was completed in December 2007. Funding for the project was provided by Authority member agencies ($317,500) and by Propositions 50 and 84 grants ($950,000). Development of this comprehensive watershed project was guided by the Project Advisory Committee (PAC) which included stakeholders representing a diverse set of watershed interests including water, resource management, environmental, agriculture, timber, recreation and national forest lands. The PAC-established project goal - Maintain and Improve Source Water Quality – provided the focus for the project.

The *Upper Mokelumne River Watershed Assessment and Planning Project* was completed in two phases. The first phase, a thorough assessment of watershed water quality, found elevated pathogen concentrations along the Middle and South Forks and Main Stem. Elevated fecal coliform concentrations were observed in the Middle Fork Mokelumne River, with high peaks also seen in the South Fork. *E. coli* concentrations on the Main Stem, Middle Fork, and North Fork also exceeded benchmark levels. Based on an analysis of the historic and simulated microorganism data and river flows, septic systems were identified as likely significant contributors of fecal coliform loading along the Middle and South Forks of the Mokelumne River.

The majority of Upper Mokelumne River watershed residents live in homes with septic systems. Given the terrain and age of many of the homes in the area, it is expected that many of these systems were either built before permits were required and/or are in need of repair or replacement. Failing or poorly maintained septic systems were identified as the likely primary source of microbial contamination in the watershed. In addition, the sheer number of septic systems, permitted and unpermitted, proximate to streams poses an even greater threat to water quality in the future as these systems age. The hydrologic model simulations and limited water quality sampling data on which these findings were based, while not conclusive, suggest that failing septic systems may be significant contributors to elevated microbial concentrations observed in the Upper Mokelumne River watershed.

The assessment was followed by the development of a watershed management plan which addresses the water quality problems revealed by the assessment. Recommendations from the watershed management plan, referred to as management measures, were developed to specifically target the sources, causes, and transport of contaminants and to encourage actions to eliminate or reduce degradation of source water quality. Due to risks to human health posed by failing septic systems the highest priority

management measure, as determined by the PAC, is the development of a Septic System Management Program for the Upper Mokelumne River watershed.

B. Project Summary – The project proposed for SOG2 grant funding is the *Upper Mokelumne Septic System Management Program*. The elements of the proposed project are briefly described below.

I. Community Outreach Plan - A strong outreach program will be developed and implemented as a first step to raise awareness of the problem posed by leaking septic systems in the watershed. Effective outreach is critical to secure support and cooperation for the other elements of the Septic Management Program. The outreach plan will utilize several communication and education tools including fact sheets/flyers, workshops, media outreach and a program website. The target audiences for the outreach plan will be local residents and business owners and owners of second homes in the watershed. Many residents and owners of second homes do not realize they are on septic systems and that many of the older or smaller capacity systems may be improperly functioning. It is a particular outreach challenge in the Upper Mokelumne River watershed to reach residents who chose to live in remote areas to avoid the general public, government entities, and additional governmental regulations.

II. Project Advisory Committee Plan – The Project Advisory Committee (PAC), the community stakeholder group that guided the development of the *Upper Mokelumne River Watershed Assessment and Planning Project*, will be reassembled and asked to take a central role in this project. A PAC Plan will be prepared to describe the steps to be taken to reestablish the PAC, to solicit participation by potentially interested new members, enlist participation of county environmental health officials, establish committee procedures, and establish a PAC work plan and meeting schedule.

III. Septic Survey – The completed *Upper Mokelumne River Watershed Assessment and Planning Project* implicates failing septic systems as the primary cause of elevated pathogen levels. Site-specific analysis is needed to supplement the documented empirical and anecdotal information to conclusively demonstrate to residents and funding agencies that investment is needed to confirm and correct the problems. A septic survey will document sources, causes, and evidence of the threat to public health. The survey will be performed in three parts.

(a) Watershed Characterization – Watershed characteristics relevant to septic system suitability, such as geologic conditions, soils and water resources, will be investigated and documented to understand what constitute acceptable conditions within the Upper Mokelumne watershed for properly functioning septic systems.

(b) Conduct Water Quality Monitoring – Water quality monitoring will be performed to conclusively demonstrate that the source of microbial contamination is leaking septic systems, and to identify the locations where contamination is most acute. This testing will also include identification of the species of origin to confirm that microbial contamination is indeed of human origin.

(c) Inventory and Assessment of Septic System Infrastructure – This task would inventory, map the locations, and evaluate the extent of leaking, poorly constructed and unpermitted systems.

IV. Sewer System Extension Feasibility – The feasibility of extending sewage collection systems to serve unsewered areas in the communities of West Point, Wilseyville and Mokelumne Hill will be evaluated. The evaluation will focus on relevant engineering, environmental and economic factors. A project description and conceptual engineering plan will be prepared for any community for which sewer service is deemed potentially feasible.

V. Homeowner Septic System Reference Guide – A reference guide designed to educate homeowners on important aspects of septic system design, use and maintenance will be produced. With the viability of septic systems oftentimes dependent on the homeowner's understanding of their system and the periodic actions needed to maintain system functionality, this reference guide will enable homeowners to take proactive roles in avoiding septic system failures.